IN THE CLAIMS

Claims 1-32. (Canceled)

33. (Original) A sensor comprising:

a ferrule, the ferrule having a bore formed therein, the ferrule having an end;

a diaphragm attached to the ferrule, the diaphragm having an inside reflecting surface facing the end of the ferrule;

a first optical fiber within the bore, the optical fiber having a first end;

a second optical fiber, the second optical fiber having a first end and a second end, the first end of the second optical fiber being attached to the first end of the first optical fiber, the second end of the second optical fiber being spaced apart from the inside reflecting surface of the diaphragm, the second end of the second optical fiber and the inside reflecting surface of the diaphragm forming a Fabry-Perot cavity;

wherein the first optical fiber has a first coefficient of thermal expansion; the second optical fiber has a second coefficient of thermal expansion, and the ferrule has a third coefficient of thermal expansion, the second coefficient of thermal expansion being selected to compensate for a difference between the first and third coefficients of thermal expansion.

34. (Original) The sensor of Claim 33, wherein a pit is formed in the ferrule.

35. (Original) The sensor of Claim 33, wherein a pit is formed in the diaphragm.

36. (Original) The sensor of Claim 33, further comprising a spacer disposed between the diaphragm and the ferrule, the spacer having an opening formed therein.

37. (Original) A sensor comprising:

a ferrule, the ferrule having an end, the ferrule having a bore formed therein;

a diaphragm attached to the ferrule, the diaphragm having an inside reflecting surface facing the end of the ferrule, at least a portion of the reflecting surface being spaced apart from the end of the ferrule;

a first optical fiber within the bore, the optical fiber having a first end;

a second optical fiber, the second optical fiber having a first end and a second end, the first end of the second optical fiber being attached to the first end of the first optical fiber, the second end of the second optical fiber being spaced apart from the inside reflecting surface of the diaphragm to form a recess, the second end of the second optical fiber and the inside reflecting surface of the diaphragm forming a Fabry-Perot cavity;

wherein the second optical fiber has a coefficient of thermal expansion that compensates for deflection of the diaphragm caused by expansion of air in the recess as the sensor is heated.

38. (Original) The sensor of Claim 37, wherein a pit is formed in the ferrule.

39. (Original) The sensor of Claim 37, wherein a pit is formed in the diaphragm.

40. (Original) The sensor of Claim 37, further comprising a spacer disposed between the diaphragm and the ferrule, the spacer having an opening formed therein.

41. (Original) A method for manufacturing a sensor comprising the steps of:

attaching a diaphragm to a ferrule;

inserting an optical fiber into the ferrule such that and end of the optical fiber is spaced apart from the diaphragm by a first distance different from a desired distance; and

welding the ferrule to the optical fiber with a laser;

wherein at least one parameter of the laser is controlled such that a distance from the end of the optical fiber and to the diaphragm changes from the first distance to the desired distance during the welding step.

42. (Original) The method of Claim 41, wherein the at least one parameter is a peak power of the laser.

43. (Original) The method of Claim 41, where the at least one parameter is a pulse width of the laser.

44. (Original) The method of Claim 41, wherein both a peak power and a pulse width of the laser are controlled.

45. (Original) The method of Claim 41, further comprising the steps of inputting light to the optical fiber and monitoring interference in reflections of the light from the end of the fiber and the diaphragm during the inserting step.

46. (Original) The method of Claim 41, further comprising the steps of:

inputting light to the optical fiber during the welding step;

converting light received from the sensor to an electrical signal, the light received from the sensor including interfering reflections from the end of the fiber and the diaphragm; and

inputting the electrical signal to a feedback circuit configured to control the at least one parameter of the laser.